Certainly! Market basket analysis is a powerful technique used in data mining and analytics to discover associations between products that are frequently purchased together. In part 1, we'll focus on the development of a market basket analysis using Python and a popular library called `mlxtend`.

First, ensure you have `mlxtend` installed. You can install it using:

```bash
pip install mlxtend
```

Now, let's proceed with the Python code:

```python
# Import necessary libraries
import pandas as pd
from mlxtend.frequent_patterns import apriori
from mlxtend.frequent_patterns import association_rules

# Load your transaction data
# Assuming you have a CSV file with columns: ['TransactionID', 'Product']
# Adjust the file path accordingly
data = pd.read_csv('your_transaction_data.csv')

# Convert the data to the required format for market basket analysis
basket = (data.groupby(['TransactionID', 'Product'])['Product']
          .count().unstack().reset_index().fillna(0)
          .set_index('TransactionID'))

# Convert counts to binary values (1 or 0)
def encode_units(x):
    if x <= 0:
        return 0
    if x >= 1:
        return 1

basket_sets = basket.applymap(encode_units)

# Generate frequent itemsets using Apriori algorithm
frequent_itemsets = apriori(basket_sets, min_support=0.02, use_colnames=True)

# Generate association rules
rules = association_rules(frequent_itemsets, metric="lift", min_threshold=1)
```

```
# Display the rules
print(rules)
```

This code assumes you have a dataset with transaction IDs and corresponding products. Adjust the column names and file path according to your data.

In this part, we covered loading the data, converting it into a suitable format, and generating frequent itemsets and association rules. In part 2, we can explore interpreting and visualizing these rules for actionable insights. Let me know if you want to proceed or if you have specific questions!